03050208-090

(Broad River/Port Royal Sound)

General Description

Watershed 03050208-090 is located in Beaufort and Jasper Counties and consists primarily of the ***Broad River*** and ***Port Royal Sound*** and their tributaries, which include the ***Chechessee River*** and the ***Beaufort River***. The watershed occupies 267,241 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Argent-Okeetee-Coosaw-Albany series. The erodibility of the soil (K) averages 0.13, and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 34.5% water, 31.4% forested land, 14.0% forested wetland, 7.2% nonforested wetland, 6.6% agricultural land, 3.9% urban land, and 2.4% barren land.

The Coosawhatchie River Watershed and the Pocotaligo River (Buckfield Backwater, Haulover Creek) join to form the Broad River. Downstream from the confluence, the Broad River accepts drainage from South Haulover Creek and Whale Branch (Big Island Creek, Huspa Creek). Whale Branch connects the Broad River to the Coosaw River. Downstream from Whale Branch, the river accepts drainage from Boyd Creek (West Branch Boyd Creek, East Branch Boyd Creek, Coles Creek, Big Pond, Middle Pond, River Pond), Habersham Creek, Euhaw Creek (White Hall Pond, Gregory Pond, Hazzard Creek, Bird Island Creek), Archers Creek, Ribbon Creek, and Ballast Creek before flowing into Port Royal Sound. Archers Creek and Ballast Creek connect the Broad River to the Beaufort River.

Hazzard Creek (Whig Swamp, Sandy Hill Backwater) drains into both Euhaw Creek and the Chechessee River. The Chechessee River also accepts drainage from Checheessee Creek and the Colleton River (Okatie River, Callawassie Creek) before flowing into Port Royal Sound. Mackay Creek (Skull Creek) connects Port Royal Sound to Calibogue Sound.

Brickyard Creek (Mulligan Creek) and Albergottie Creek (Salt Creek) join to form the Beaufort River, which accepts drainage from Pigeon Point Creek, Broomfield Creek, Factory Creek, Battery Creek, and Cowen Creek (Distant Island Creek, Capers Creek). Cowen Creek is also described as Chowan Creek, and Capers Creek is also known as Wallace Creek. Cat Island Creek connects the Beaufort River to Cowen Creek. Archers Creek and Ballast Creek connect the Beaufort River to the Broad River. Streams draining directly into Port Royal Sound include Mackay Creek, Skull Creek, Park Creek, Coggin Creek, Station Creek, and Morse Island Creek. There are a total of 19.8 stream miles, 364.0 acres of lake waters, and 55,772.1 estuarine acres in this watershed.

The Broad River and its tributaries are classified SFH, as is Port Royal Sound. The Beaufort River and its tributaries from the confluence of Albergottie Creek and Brickyard Creek (SFH) to a point between Battery Creek and Cat Island Creek are classified SA; and from that point to its confluence with Port Royal Sound they are classified SFH. The Chechessee River and its tributaries, except for the Colleton River, are classified SFH. The Colleton River and its tributaries including the Okatie River are classified ORW.

Surface Water Quality

Station #	Type	Class	Description
MD-007	P	SFH	Pocotaligo River at US 17 at Pocotaligo
MD-116	P	SFH	Broad River at SC 170, 7.5mi SW of Beaufort
MD-172	S	SFH	Broad River at mouth of Archer Creek on SW side of USMC
MD-117	S	SFH	Chechessee River at SC 170, 10.5mi SW of Beaufort
MD-176	W	ORW	Colleton River at Colleton Neck at jct with Chechessee River
MD-245	P	ORW	Colleton River near mouth (shellfish station 18-5)
MD-006	S	SFH	Port Royal between buoy 25&24, W of Bay Point Island
MD-001	S	SA	Beaufort River above Beaufort at channel marker 231
MD-002	S	SA	Beaufort River at drawbridge on US 21
MD-003	P	SA	Beaufort River below Beaufort at channel marker 244
MD-004	S	SFH	Beaufort River at junction with Battery Creek near marker 42
MD-005	P	SFH	Beaufort River below outfall of Parris Is. Marine Base at buoy 29
MD-013	S	SFH	mouth of Skull Creek between channel markers 3 & 4 near Redbo

Pocotaligo River (MD-007) **–** Aquatic life uses are not supported due to turbidity excursions. This is a tidally influenced system, which are often characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions were noted, they were typical of values seen in such systems and are considered natural, not standards violations. There is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentrations suggest improving conditions for these parameters. A high concentration of lead was measured in the 1997 sediment sample, and a very high concentration of lead was measured in the 1998 sample. Both of these values exceeded the ERL value for lead but not the ERM value. Recreational uses are not supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Broad River **–** There are two monitoring sites along the Broad River. At the upstream site ***(MD-116)***, aquatic life and recreational uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. At the downstream site ***(MD-172),*** aquatic life uses are partially supported due to dissolved oxygen excursions. In addition, there is a significant decreasing trend in dissolved oxygen concentration. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

Chechessee River (MD-117) **–** Aquatic life uses are not supported due to dissolved oxygen excursions. In addition, there is a significant decreasing trend in dissolved oxygen concentrations and a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

Colleton River **–** There are two monitoring stations along the Colleton River. Aquatic life uses are fully supported at the upstream site ***(MD-176).*** This is a tidally influenced system with marsh drainage, which

are often characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions were noted, they were typical of values seen in such systems and are considered natural, not standards violations. There is a significant decreasing trend in dissolved oxygen concentration. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are also fully supported at the downstream site ***(MD-245)***. There is a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Beaufort River - There are five monitoring sites along the Beaufort River. Aquatic life uses are not supported at the furthest upstream site ***(MD-001)*** due to dissolved oxygen excursions. This is compounded by a significant decreasing trend in dissolved oxygen concentration. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

At the next site downstream ***(MD-002),*** aquatic life uses are not supported due to dissolved oxygen excursions. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Further downstream ***(MD-003)***, aquatic life uses are not supported due to dissolved oxygen excursions and there is a significant increasing trend in turbidity. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

At the next downstream site ***(MD-004)***, aquatic life uses are not supported due to dissolved oxygen excursions. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported at the furthest downstream site ***(MD-005)***. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Skull Creek (MD-013) – Aquatic life uses are fully supported. This is a tidally influenced system with marsh drainage, which are often characterized by naturally low dissolved oxygen concentrations. Although dissolved oxygen excursions were noted, they were typical of values seen in such systems and are considered natural, not standards violations. Also, this is a secondary monitoring station and sampling is intentionally biased towards periods with the potential for low dissolved oxygen concentrations. There is a significant decreasing trend in pH. A significant decreasing trend in five-day

biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

***Port Royal Sound (MD-006)* –** Aquatic life uses are fully supported. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

A fish consumption advisory has been issued by the Department for mercury and includes the Coosawhatchie River within this watershed (see advisory p.58).

Shellfish Monitoring Stations

Station #	Description
14-14	Huspa Creek at railroad trestle
14-18	Huspa Creek at Bull Point- Whale Branch Pog
15-10	Battery Creek at Five Points Creek
15-14	Parris Island at WWTP outfall
15-15	Ballast Creek at Beaufort River
15-16	Station Creek at Beaufort River
15-17	Cat Island Creek at Cowen Creek
15-18	Second Middle Marsh in Cowen Creek
15-19	Battery Creek 1000 feet below Rabbit Island
15-20	Capers Creek SSG at Penn Community Services Retreat Center
15-21	Unnamed creek at (former) discharge of BC High and Cherry Hill High
15-23	Distant Island State Shellfish Ground
15-24	Battery Creek – SC Hwy 280 bridge
15-25	Battery Creek – Dowlingwood tributary
15-26	Battery Creek – Picket Fence tributary
15-27	Battery Creek – Cherry Hill tributary
15-28	Battery Creek – storm water outfall under RR track
15-29	Battery Creek – Tributary on right side before Battery Shores
15-30	Battery Creek – Cottage Farms Community Dock
15-31	Battery Creek – Battery Point Community Dock
15-32	Battery Creek – under power line
17-01	Broad River at S.A.L. RR bridge
17-02	Boyd Creek at Broad River
17-03	Broad River at Whale Branch
17-04A	USMC Laurel Bay WWTP Output
17-07	Mouth of Chechessee Creek at Chechessee River
17-08	Chechessee River bridge
17-09	Mouth of Euhaw Creek at Hazzard Creek
17-10A	Archers Creek 1000 feet west of bridge
Station #	**Description**
17-12A	Ballast Creek near Page Field Road Causeway
17-13	Broad River at creek below Ballast Creek
17-14	Broad River at Parris Island spit
17-16	Broad River at Corn Island – mouth of creek
17-16A	First split in Habersham Creek above station #16
17-17	Hazzard Creek at Chechessee River

17-18	HAZZARD CREEK AT CHELSEA PLANTATION CLUBHOUSE
17-21	CONFLUENCE OF MIDDLE CREEK AND WHALE BRANCH
17-22	CONFLUENCE OF EAST AND WEST BRANCH OF BOYD CREEK
17-23	HEADWATERS OF EUHAW CREEK ONE MILE ABOVE BOLIN HALL LANDING
18-01	OKATIE RIVER AT CAMP ST. MARY'S DOCK
18-02	OKATIE RIVER BEHIND BAILEY'S OYSTER DOCK
18-03	CHECHESSEE CREEK AT OKATIE RIVER
18-04	CALLAWASSIE CREEK AT COLLETON RIVER, MOUTH OF CREEK
18-05	CALLAWASSIE CREEK AT COLLETON CREEK AT TREE LINE
18-06	SAWMILL CREEK AT COLLETON CREEK
18-07	OKATIE RIVER AT INDIGO PLANTATION
18-08	OKATIE RIVER AT DOCK WITHOUT HOUSE
18-09	FIRST UNNAMED TRIBUTARY IN CHECHESSEE CREEK FROM COLLETON RIVER
18-10	SECOND BRIDGE TO CALLAWASSIE ISLAND
18-11	FIRST BRIDGE TO CALLAWASSIE ISLAND
18-12	SERIES OF UNNAMED TRIBUTARIES IN CHECHESSEE CREEK
18-13	FIRST UNNAMED TRIBUTARY TO CHECHESSEE POINT IN CHECHESSEE CREEK
18-14	TRIBUTARY FROM SPRING ISLAND SHRIMP POND
18-15	DOCK AT WADDELL MARICULTURE CENTER
18-16	OKATIE RIVER AT CONFLUENCE OF PINKNEY COLONY TRIBUTARY
18-17	OKATIE RIVER AT CONFLUENCE OF CHERRY POINT TRIBUTARY
20-09	MACKEY CREEK AND CHECHESSEE RIVER
20-13	SKULL CREEK AND PORT ROYAL SOUND
20-21	FISH HAUL CREEK AT PORT ROYAL SOUND

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-029	GB	MIDDENDORF	PARRIS ISLAND
AMB-091	GB	TERTIARY LIMESTONE	SHELDON
AMB-093	GB	TERTIARY LIMESTONE	BLUFFTON

All water samples collected from ambient monitoring wells ***AMB-029, AMB-091,*** and ***AMB-093*** met standards for Class GB groundwater.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
BROAD RIVER USMC/MARINE CORPS AIR STATION PIPE #: 002 FLOW: 0.75	SC0000825 MINOR INDUSTRIAL
HUSPA CREEK BRAYS ISLAND PLANTATION WWTP PIPE #: 001 FLOW: 0.059	SC0047228 MINOR DOMESTIC WETLAND

BEAUFORT RIVER BJW&SA/ST. HELENA WWTP PIPE #: 002 FLOW: 1.2	SC0039811 MINOR DOMESTIC UNCONSTRUCTED
BEAUFORT RIVER BJW&SA/SHELL POINT WWTP PIPE #: 001 FLOW: 0.4 (TIER I) PIPE #: 001 FLOW: 0.532 (TIER II) PIPE #: 001 FLOW: 0.8 (TIER III)	SC0042609 MINOR DOMESTIC
BEAUFORT RIVER BJW&SA/SOUTHSIDE WWTP PIPE #: 001 FLOW: 0.4 (TIER I) PIPE #: 001 FLOW: 0.532 (TIER II)	SC0021016 MAJOR DOMESTIC
BEAUFORT RIVER US MARINES/PARRIS IS. DEPOT PIPE #: 001 FLOW: 3.0 PIPE #: 003 FLOW: M/R	SC0002577 MINOR INDUSTRIAL
ALBERGOTTI CREEK US MARINES/BEAUFORT AIR STATION PIPE #: 001 FLOW: 0.75	SC0000825 MINOR INDUSTRIAL
BATTERY CREEK OC WELCH FORD & LINCOLN MERCURY PIPE #: 001 FLOW: M/R	SCG750015 MINOR INDUSTRIAL
WWTP PRIOR TO DISPOSAL HILTON HEAD NO.1 PSD WWTP PIPE #: 001 FLOW: 3.35	SC0046191 MAJOR DOMESTIC WETLAND
PALMETTO HALL WETLANDS HILTON HEAD NO.1 PSD WWTP PIPE #: 002 FLOW: 0.20	SC0046191 MAJOR DOMESTIC WETLAND
PALMETTO HALL PLANTATION WETLANDS HILTON HEAD NO.1 PSD WWTP PIPE #: 003 FLOW: 0.65	SC0046191 MAJOR DOMESTIC WETLAND
DEL WEBB WETLAND BJW&SA/OKATIE WATER RECLAIM. FACILITY PIPE #: 003a FLOW: 0.3963 PIPE #: 003b FLOW: 0.1189	SC0047279 MAJOR DOMESTIC

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
HICKORY HILL LANDFILL & RECYCLING CTR DOMESTIC	272401-1101 ACTIVE
HICKORY HILL LANDFILL & RECYCLING CTR DOMESTIC	272401-1102 (DWP-112) INACTIVE

HICKORY HILL LANDFILL & RECYCLING CTR INDUSTRIAL	IWP-197, IWP-168 INACTIVE
TOWN OF RIDGELAND DUMP #2 DOMESTIC	---------- INACTIVE
US MARINE CORP. RECRUITING DOMESTIC	DWP-909, DWP-905, CWP-020 INACTIVE
BEAUFORT COUNTY LANDFILL DOMESTIC	DWP-007, DWP-063 INACTIVE
OAKWOOD RECYCLING DOMESTIC	272438-1201 (CWP-037) INACTIVE
GREENFIELD C&D LANDFILL C & D	---------- INACTIVE
BARNWELL RESOURCES, BEAUFORT INDUSTRIAL	IWP-233, CWP-006 INACTIVE
BARNWELL RESOURCES, BEAUFORT C & D	072410-1201 ACTIVE

Land Application Sites

LAND APPLICATION SYSTEM ***FACILITY NAME***	***ND#*** ***TYPE***
SPRAYFIELD BJW&SA/POINT SOUTH WWTP	ND0068781 DOMESTIC
SPRAYSITES BJW&SA/PALM KEY WWTP	ND0064513 DOMESTIC
GOLF COURSE CALLAWASSIE DEVELOPMENT	ND0062235 DOMESTIC
SPRAYSITE BEACHWOOD MHP	ND0067091 DOMESTIC
GOLF COURSE TJ BARNWELL UTILITIES, INC.	ND0067393 DOMESTIC
GOLF COURSE AND SPRAYSITES HILTON HEAD #1 PSD	ND0068462 DOMESTIC
GOLF COURSE SPRING ISLAND CO./SPRING IS. WWTP	ND0077828 DOMESTIC

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
BEAUFORT COUNTY PUBLIC WORKS CLARENDON FARMS	1236-13 SAND/CLAY

NATHAN WILSON EARLY BRANCH MINE	1352-49 SAND/SANDCLAY
CLELAND CONSTRUCTION COMPANY SHILOH MINE	1137-13 SAND/CLAY
BARNWELL RESOURCES, INC. BARNWELL RESOURCES MINE	0857-13 SAND/CLAY
BLANKENSHIP CONSTRUCTION BLANKENSHIP MINE	1190-13 SAND/CLAY
RIVERS EDGE CO. HONEY HILL	1346-53 SAND/SANDCLAY
OKEETEE CLUB INC. MINE #4-A	0078-53 SAND
MALPHRUS CONSTRUCTION COMPANY, INC. MALPHRUS	1141-53 SAND
CLELAND CONSTRUCTION COMPANY CLELAND – D.R. MINE	1108-13 SAND
ABLE CONTRACTING INC. CRANE MINE	1225-13 SAND/CLAY
MALPHRUS CONSTRUCTION COMPANY, INC. SCHULTZ MINE	1234-13 SAND/CLAY
ULMER BROTHERS, INC. HUNTING ISLAND FARM PONDS	1348-13 SAND/SANDCLAY

Growth Potential

There is a high potential for growth in this watershed, which contains portions of the City of Beaufort and the Towns of Yemassee, Bluffton, and Hilton Head. The City of Beaufort and the Towns of Lady's Island, Burton, and Shell Point are projected to continue experiencing residential and commercial growth. Less than 25% of the total land area of Lady's Island, Burton or Shell Point is suitable for septic system installations; and another 25% or less is classified as marginally suitable.

The Town of Bluffton is an unincorporated area experiencing substantial growth. Del Webb's Sun City retirement community development near Bluffton has added tremendous residential and commercial growth to the area. Between 25 and 50% of the total land area is suitable for septic system installations; and another 25% or less is classified as marginally suitable. Beaufort-Jasper Water and Sewer Authority has extended water and sewer services to the area to provide for the growth. They were then able to extend the services over to Hilton Head, where the natural aquifer is becoming shallow and salty. The area along U.S. Highway 278 en route from Bluffton to Hilton Head is a high growth commercial corridor. There are numerous golf and/or residential developments, and plans to develop nearby areas in a similar fashion. The new toll road that by-passes a portion of U.S. Highway 278 diverts the heavy commercial tourism traffic to more residential areas and the beaches. Calawassie Island on the

Colleton River is currently being developed and plans to build a bridge over to Spring Island have been discussed, which would increase the island's residential development potential.

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

In order to establish a TMDL for oxygen demanding substances in the Beaufort River, the Beaufort Jasper Water and Sewer Authority (BJWSA) has initiated and directed the development of a dynamic water quality model for SCDHEC to use in determining the assimilitative capacity of the river. As a result, an Artificial Neural Network model (ANN) was developed by a project team composed of scientists and engineers from Jordan, Jones & Goulding (JJG), Advanced Data Mining (ADMi), and the U.S. Geological Survey (USGS). The model encompasses the Beaufort River from Brickyard Creek to its confluence with the Broad River. Modeling data (water level, water temperature, specific conductance, dissolved oxygen concentration) were collected from December 1998 to September 2001 by USGS. The Department plans on using the model to determine the TMDL and point source wasteload allocations for discharges to the Beaufort River. These discharges include Southside, Shell Point, U.S. Marine Corps. Air Station, and Parris Island wastewater treatment plants.